North American Drought Monitor – February 2005

Canada: Most areas in western Canada received well above average precipitation in August 2004, which resulted in higher than average soil moisture levels early in the fall. This was followed by an abnormally dry period during September and October. Therefore, in order to assess the moisture balance for the past fall and winter seasons it is necessary to include an evaluation of August precipitation.

Precipitation accumulations since August 1 were above average in most of British Columbia, except the Kootenay region in the southeast, the Fort Nelson area in the northwest and parts of Vancouver Island. Snow conditions were quite variable across the province, with much of central and southern BC having below normal snowpacks and northern BC having near normal snowpacks. Vancouver Island, the South Coast, Lower Fraser, the Similkameen, portions of the west and south Okanagan, and southern portions of the East and West Kootenay had well below normal snowpacks. For Vancouver Island and the Similkameen, snow water conditions were a record low. Southern portions of the Middle Fraser also had less snow than usual. The North Thompson, Upper Fraser, Skeena, Peace and Liard river basins had near normal snowpacks. Snow accumulations in most low elevations throughout the Fraser, Thompson, Okanagan, Kettle and Similkameen basins, along with the Kootenays and the south coast, melted off in mid-January during a prolonged intense Pacific frontal storm system and runoff in the past two months was very high. By February 28, on average, greater than 80% of the peak snowpack for the year has accumulated, with the peak snowpack occurring generally around April 15th. Some regions in the southern half of the province have very low snowpack and little season remaining to accumulate additional snow. Provincial officials were anticipating runoff and lake inflow levels to decline in March. Unless significant snow accumulations occur over the remaining winter period and spring precipitation is at least normal, there is potential for unusually low summer-season flow in rivers throughout south and central BC, and throughout the south coast and Vancouver Island. The Peace, Nechako, Stikine, Liard, Skeena, Upper Fraser and North Thompson regions had enough snowpack that with normal precipitation between now and May 1, peak snowpacks for the year would be near normal. The Kootenay region of southeast British Columbia and the Fort Nelson were rated moderate drought to abnormally dry (D1 - D0).

In Alberta, measured snowpacks in the eastern Rockies were much below average in the Oldman River basin, below average to average in the Bow River basin, above average in the Red Deer River basin, average in the North Saskatchewan River basin, and above average to much above average in the Athabasca River basin. The mountain snowpack is an important source of water supply to reservoirs in the spring. On average, the accumulation of snow, at this time of the year, accounts for nearly three-quarters of the seasonal totals. Forecasted natural runoff volumes for the period between March and September 2005 in the Oldman River basin were below to much below average; however, with generally high soil moisture levels in the basin and above average storage in major irrigation and hydroelectric reservoirs, precipitation during the next couple of months could change the outlook significantly. In the plains region of Alberta, a below average to average snowpack was measured south of Red Deer, and in a strip from Edson and

Edmonton northwest to the Peace River region. Much below average snow accumulations were measured at the remaining snow course locations, including the Grande Prairie, Slave Lake, Athabasca, and Lloydminster areas. The northeast corner of the province remained in an abnormally dry state and southern regions were rated moderate drought to abnormally dry (D1 –D0). There are no impacts at this time, and if conditions improve over the next couple of months no impacts are likely to occur.

The 2005 spring runoff potential in Saskatchewan was expected to vary from well below normal in southwestern and south central areas to slightly above normal in northern areas of the grainbelt region. In northern Saskatchewan, much of the Churchill River Basin was forecast to have a well above normal runoff. Areas across southern Saskatchewan are rated moderate drought and abnormally dry in anticipation of a low runoff but if conditions improve in the next couple of months no impacts will be experienced.

Soil moisture was above average across most of southern Manitoba as a result of the cool, wet summer and autumn. Snow cover was slow to develop in the fall, allowing for soil to freeze quite deeply. Heavy snow fell in late December and early January, resulting in above average snow cover over much of southern Manitoba. While there has been very little additional snow since mid-January, the snowpack is still above average in many areas.

In Ontario, February precipitation ranged from above average in the south to well below average in the northwest region. Precipitation accumulations since September 1, 2004 were generally average or above average. All streamflow recording stations in southern Ontario reported flows above the monthly mean, with the exception of the Sauble River at Sauble Falls, which was slightly below the monthly mean. In the northeastern region, the Sturgeon River and the Missinaibi River at Mattice remained well above the mean for February. In the northwestern region, flows on the English River remained slightly above the monthly mean for the month of February. The levels of lakes St. Clair and Ontario remain above average, while the levels of lakes Michigan and Huron remain below average. Lake Superior was at its average level. The levels of all Great Lakes are higher than one year ago.

Precipitation has been variable across the province of Quebec. Snow accumulations in southern regions were below the median in parts of Outaouais et Montreal, Saint-Laurent nord-ouest et Sagenay et lac Saint-Jean. Much of northern Quebec had average or above average precipitation since November 1. Climatic conditions from now to the beginning of the summer period will contribute significantly to the supply situation at the beginning of summer. No drought related issues are anticipated for the province.

In New Brunswick, for the second month in a row, monthly precipitation was below normal with many areas receiving less than 50% of normal for the month. As a result, the snow pack was very light in all areas except the northwest and southeast where measurements were close to normal. Accumulated precipitation for the past three and six month periods was below normal over most of the province and the region is rated abnormally dry (D0). Monthly runoff was near normal in most areas; the northwest was

a little above normal and the southwest was slightly below normal. Water supply declined during February, but still was adequate in most areas and no water shortages are anticipated.

In Nova Scotia, Prince Edward Island and Newfoundland and Labrador, precipitation during the winter period has been near average and there are no drought related water supply concerns anticipated.

United States: During February, drought worsened across the Northwest from Washington and Oregon eastward to Montana, as mountain snowpacks dropped to record or near-record lows across the region. Monthly precipitation totaled less than 25% of normal from Washington eastward through northern and central Idaho and across northern Montana and into much of North Dakota. Nearly the entire northwestern region reported less than one-half of normal precipitation, with the western Dakotas and western Nebraska reporting similar dryness as well. Preliminary statewide rankings showed Montana with its driest February in 110 years of record-keeping. Idaho, Washington, and Oregon ranked within the driest four years. Above-normal temperatures ranging from 1 to 4 degrees C (2 to 8 degrees F) hastened snowpack melt from Montana into the northern High Plains. In contrast, and consistent with the winter season as a whole, above-normal rain and snow continued to pound the Southwest, from southern California to west Texas, with the region seeing 200 to 400% of normal precipitation for the month. As a result, New Mexico reported its wettest February on record, based on preliminary data, and Arizona its second wettest. The net result for the drought depiction over the West this month was an increase of D2 drought into Washington and Oregon, as well as much of Idaho, and an increase to D3 drought in central and western Montana. D2 drought expanded slightly eastward in South Dakota, while D4 drought expanded westward in northern Wyoming. Drought continued to diminish across the Southwest, with D1 to D2 mainly confined to the upper Colorado River Basin, eastern Arizona, and northern New Mexico. Elsewhere, abnormal dryness developed in the northwest peninsula of Florida and over some parts of Puerto Rico.

Mexico: In February Mexico experienced wet conditions. The National Meteorological Service reported an areal precipitation average rainfall that was 199% of normal across the country. For the country as a whole, February 2005 was ranked as the third wettest February for the period 1941-2005, only after 1983 and 1973. Conditions were exceptionally wet through wide sections of the northern half of the country, while the dry conditions observed since July 2004 continued over southeastern Mexico, including southern Veracruz, northeastern Oaxaca, Tabasco, Chiapas and most of the Yucatan peninsula. The wet conditions in northern México were associated to a split jet stream pattern across the eastern North Pacific with heavy rainfall events hitting northwest Mexico. A local maximum of 180mm in 24 hours was reported in Sonora (El Tanque station) on February 11.

The persistent pattern of northern wet and southeastern dry has led to improvement in some areas and deterioration in others. 200+ % of normal precipitation in northwestern

Mexico has lead an elimination of the abnormally dry (D0) conditions over Nayarit and portions of Jalisco, although the abnormally dry (D0) and moderate drought (D1) conditions along the Pacific coast from Jalisco to Guerrero remain unchanged. Portions of Guerrero, Oaxaca, and Chiapas on the Pacific side, as well as Tabasco and the Yucatan peninsula on the Gulf side received less than 25% of their monthly normal precipitation during February 2005. As a consequence, severe drought conditions (D2) developed over Tabasco, which is the Mexican state more affected by drought, while moderate drought (D1) were expanded over the entire stated of Chiapas. The persistence of long-term dry conditions in southeastern Mexico has raised concerns about an active fire season; as a number of fires have already been reported in Chiapas and Oaxaca.